TRANSLATION

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
P0769PC		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/JP2004/019517	27.12.2004	05.01.2004

International Patent Classification (IPC) or national classification and IPC

G02F1/35

Applicant

JAPAN SCIENCE AND TECHNOLOGY AGENCY

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 7 sheets, as follows:

      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))

      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2004/019517

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (Rule 12.3 and 23.1(b))

☐ publication of the international application (Rule 12.4)

☐ international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☐ the international application as originally filed/furnished

☒ the description:

pages 1-24 as originally filed/furnished

pages* _____ received by this Authority on _____

pages* _____ received by this Authority on _____

☒ the claims:

nos. 2-4,6,7,11,16 as originally filed/furnished

nos.* _____ as amended (together with any statement) under Article 19

nos.* 1,5,8-10,12-15 received by this Authority on 29.11.2005

nos.* _____ received by this Authority on _____

☒ the drawings:

sheets fig. 1-13 as originally filed/furnished

sheets* _____ received by this Authority on _____

sheets* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☒ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☒ the claims, nos. 17,18

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing *(specify)*: _____

☐ any table(s) related to sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/JP2004/019517

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-16	YES
	Claims		NO
Inventive step (IS)	Claims	1-16	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-16	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The inventions set forth in claims 1 to 4, 8, 9 and 12 to 16 involve an inventive step in relation to the documents that are cited in the international search report. Techniques wherein the signal light pulses that were input are subjected to linear chirping and are thereafter made to traverse a dispersion medium so as to undergo optical Fourier transformation are well known (refer to document 2 and the like), and document 1 discloses an optical Fourier transformation technique wherein an optical Kerr medium is used as the means for controlling the chirping of the signal light pulses. However, the optical Fourier transformation technique wherein an optical Kerr medium into which a control light pulse with a shape expressed by a quadratic function or a parabola has been introduced is used as the means for subjecting the input signal light pulses to linear chirping is not disclosed in any of the documents that are cited in the international search report, and would not have been obvious to a person skilled in the art.

The inventions set forth in claims 5 to 7, 10 and 11 involve an inventive step in relation to the documents that are cited in the international search report. The optical Fourier transformation technique wherein a generator for

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

generating quadratic function-type optical pulses, which is equipped with dispersion reducing fibers for reducing the absolute value of the normal dispersion in the longitudinal direction, is used as the means for generating the control light pulses that are introduced into the optical Kerr medium is not disclosed in any of the documents that are cited in the international search report, and the feature in question would not have been obvious to a person skilled in the art.

Citations:

Document 1: L. Kh. MOURADIAN et al., "Spectro-Temporal imaging of Femtosecond Events," IEEE Journal of Quantum Electronics, Vol. 36, No. 7, (2000), pages 795 to 801

Document 2: B. H. KOLNER, "Space-Time Duality and the Theory of Temporal Imaging," IEEE Journal of Quantum Electronics, Vol. 30, No. 8, (1994), pages 1951 to 1963

Document 3: V. I. KURGLOV et al., "Self-Similar Propagation and Amplification of Parabolic Pulses in Optical Fibers," Physical Review Letters, Vol. 84, No. 26, (2000), pages 6010 to 6013

Document 4: D. ANDERSON et al., "Wave-braking-free pulses in non-linear optical fibers," J. Opt. Soc. Am., B, Vol. 10, No. 7, (1993), pages 1185 to 1190

Document 5: JP 05-265057 A (Nippon Telegraph And Telephone Corp.), 15 October 1993 (Family: none)